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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/659,642

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David G. Therrien

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EXAMINER

PHAM, MICHAEL

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/659,642	<b>Applicant(s)</b> THERRIEN ET AL.	
	<b>Examiner</b> MICHAEL D. PHAM	<b>Art Unit</b> 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**Detailed Action**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.

***Status of Claims***

2. Claims 1-15 are pending.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040049513 by Yakir (hereafter Yakir) further in view of U.S. Patent 5991753 by Wilde (hereafter Wilde).**

**Claim 1:**

Yakir discloses the following claimed limitations:

“receiving, at a destination server, a set of stub files associated with the set of files;”

[Figure 3 element 302.]

“maintaining, at the destination server, a list of repository nodes” [0023, File location information or portions thereof may also be stored on or replicated in databases on servers 106. Database 112 may be embodied in various forms including a relational database, directory services, data structures, etc.]

“using the lists, initiating recovery of files in the set of files on the destination fileserver;” [0023, SMS stores information tracks locations of files that are migrated and recalled. 0023, File location information or portions thereof may also be stored on or replicated in databases on servers 106. Database 112 may be embodied in various forms including a relational database, directory services, data structures, etc. 0033, servers and SMS facilitate migration and remigration, and recall operations for files stored in storage environment 100.]

“using a stub file in the set of stub files, allowing access to a full content of a file associated with the stub file;” [0046, stub files or tag file is a physical file that represents a migrated file. The stub file serves as an entity in the file system through which the original migrated file can be accessed ]

“replacing each stub file with a full content of the file associated with the stub file;”  
“[0005, demigrates the requested data file from the repository storage location back to the original storage location

"and wherein said replacing includes

receiving a client request for a specified file in the set of files;” [0005, users and applications can access (client request) the migrated file (specified file) as though the file was still stored in the original storage.]

“replacing the stub file associated with the specified file with a full content of the specified file.” [0005, demigrate].

Yakir does not explicitly disclose “repository nodes that contain a replica of each file in the set of files, and a list of files in the set of files stored at the destination server;”

On the other hand, Wilde discloses figure 3 element 31 containing a resident file and a stub file, respectively elements 38 and 34. Accordingly, containing a replica file (element 38) and a list of files in the set of files stored at the destination server (resident files 38 and 40) is disclosed.

It would have been obvious to a person of an ordinary skill at the time invention was made to have applied Wilde’s disclosure above to the disclosure of Yakir for the purpose of providing operations of file migration systems. In providing, a replica file and a list of files stored on the destination server it allows for less disk space to be utilized. Thus, more efficiently saving space in order to save more data.

**Claim 2:**

As to claim 2, Yakir discloses the claimed limitation “wherein the metadata is received at said destination fileserver from a repository node” [Yakir, 004, A stub file may contain attributes or

metadata of the migrated file. 0009, Yakir, moving a stub file. Hence, must receive metadata and a set of stub files.].

**Claim 3:**

As to claim 3, Yakir discloses the limitation

“selecting said destination fileserver for receiving said metadata and said stub files”  
[Yakir, 004, A stub file may contain attributes or metadata of the migrated file. 0009, Yakir, moving a stub file. Hence, since the stub and metadata are moved, a selected destination fileserver must be made.].

**Claim 4:**

As to claim 4, Yakir discloses the limitation,

“Selecting a share of data for receiving at said destination fileserver” [0005, users and applications can access the migrated file as though the file was still stored in the original storage.].

**Claim 8:**

Yakir discloses the following claimed limitations:

“a file server having:

A file system operative to store client files;" [file system, 0004];

"a fileserver API operative to communicate with a repository;" [0023, storage management system];

“a fileserver file transfer module in communication with the file system and configured to transfer files for the file system to and/or from at least one repository; and” [0023, migrate]

“a recovery service in communication with the fileserver API and with the file system and configured to transfer a set of files, the recovery service having:” [0023, recall]

"the recovery service having: a receiving component configured to receive metadata and stub files associated with the set of files at the fileserver;" [0004, A stub file may contain attributes or metadata of the migrated file. 0009, moving a stub file. Hence, must receive metadata and a set of stub files.];

“a location updating component in communication with the receiving component and configured to maintain a list of repository nodes” [0023, SMS stores information that tracks location of files that are migrated (or remigrated) and recalled, and further stating that file location information may also be stored in data structures (i.e. one of ordinary skill in the computer art would know that lists are a common form of data structures, and that file location information could pertain to a path (i.e. designated repository that holds the file) .). Hence, Yakir would suggest “maintaining a list of repository nodes that are associated with each file in the set of files by updating a location components in the fileserver.” ];

“wherein using the lists, said recovery service is configured to initiate recovery of files in the set of files on the fileserver;" [0023, SMS stores information tracks locations of files that are migrated and recalled. 0023, File location information or portions thereof may also be stored on or replicated in databases on servers 106. Database 112 may be embodied in various forms including a relational database, directory services, data structures, etc. 0033, servers and

SMS facilitate migration and remigration, and recall operations for files stored in storage environment 100.]

“wherein using a stub file in the set of stub files, said recovery service is configured to allow access to a full content of a file associated with the stub file; and”[0046, stub files or tag file is a physical file that represents a migrated file. The stub file serves as an entity in the file system through which the original migrated file can be accessed ]

“a stub file replacement component in communication with the receiving component and configured to replace each stub file with the full content of the file associated with the stub file.” [0005, demigrates the requested data file from the repository storage location back to the original storage location].

Yakir does not explicitly disclose “that contain a replica of each file in the set of files and a list of files in the set of files stored at the destination fileserver;”.

On the other hand, Wilde discloses figure 3 element 31 containing a resident file and a stub file, respectively elements 38 and 34. Accordingly, containing a replica file (element 38) and a list of files in the set of files stored at the destination server (resident files 38 and 40) is disclosed.

It would have been obvious to a person of an ordinary skill at the time invention was made to have applied Wilde’s disclosure above to the disclosure of Yakir for the purpose of providing operations of file migration systems. In providing, a replica file and a list of files stored on the



destination server it allows for less disk space to be utilized. Thus, more efficiently saving space in order to save more data.

**5. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040049513 by Yakir (hereafter Yakir) and U.S. Patent 5991753 by Wilde (hereafter Wilde) further in view of U.S. Patent 5564037 by Lam (hereafter Lam).**

**Claim 5:**

As to claim 5, Yakir and Wilde do not explicitly disclose “wherein the set of files is the set of files that have been accessed during a specified period and wherein replacing each stub file comprises recursively replacing the stub file associated with the file that was most-recently accessed until all the stub files in the set of files have been replaced”.

On the other hand, Lam discloses col. 1 lines 59-64, the frequency of use of the data can be used as a criteriaon for migrating the data from the file server to the secondary and tertiary storage devices. By migrating data which is infrequently used or accessed, space can be freed on the file server while users continue to scan files as if they still resided on the file server. Further disclosing in col. 2 lines 1-15 that if a data file has resided on the, network file server for a predetermined period of time can be migrated initially to an optical storage device. That is, Lam suggests “wherein the set of files is the set of files that have been accessed during a specified period and wherein replacing each stub file comprises recursively replacing the stub file

associated with the file that was most recently accessed until all the stub files in the set of files have been replaced”.

Yakir, Wilde, and Lam are all directed towards storage management. All are therefore within the same field of endeavor. For the above reasons, it would have been obvious to one of ordinary skill at the time the invention was made to have applied Lam’s disclosure of determining if the data file remains on a storage device for a predetermined period of time without being requested by the file server then the file can be migrated to the combination of Yakir and Wilde for the purpose of providing a more efficient method of storing the data files of a networked computer system based on the cost, speed, and capacity of the hierarchy of storage devices.

**Claim 6:**

Lam discloses “wherein the specified period is a most-recent period” [Lam, col. 2 lines 1-15].

**6. Claims 7 and 9-12 are are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040049513 by Yakir (hereafter Yakir), U.S. Patent 5991753 by Wilde (hereafter Wilde) and ) further in view of U.S. Patent Application Publication 20020055972 by Weinman, JR. (hereafter Weinman)**

**Claim 7:**

Yakir and Wilde do not explicitly disclose “wherein the location component is a location cache”. However, Weinman discloses the claimed limitation “wherein the location component is a

location cache” [Wienman, 0002, caching approach for ensuring data survivability by dynamically replicating the information at a number of sites and maintaining at least a predetermined minimum number of mirror sites containing the information.]. Yakir, Wilde, and Wienman are all directed towards storage management. All are therefore within the same field of endeavor. For the reasons given above, it would have been obvious to one of ordinary skill at the time the invention was made to apply Weinman’s disclosure of keeping data in more than one location to the combination of Yakir and Wilde for providing a way of protecting data.

**Claim 9:**

As to claim 9, the combination of Yakir and Wilde discloses in Wilde the claimed limitation

“A policy cache operative to store a protection policy associated with a share” [Wilde, Col. 13 lines 57-67 and col. 14 lines 1-4, a policy for performing migration.]

Yakir and Wilde do not explicitly disclose

“A filter driver operative to intercept input/output activity initiated by client file requests and to maintain a list of modified and created files since a prior backup”

“A mirror service in communication with the filter driver and the policy cache, the mirror service configured to prepare modified and created files in a share to be written to a repository as specified in the protection policy associated with the share”

On the otherhand, Wienman discloses

“A filter driver operative to intercept input/output activity initiated by client file requests and to maintain a list of modified and created files since a prior backup” (0014-0015, when a request comes in from Miami, a new copy might be created in Miami. Central server that keeps track of the global number of copies each object and their locations);

“A mirror service in communication with the filter driver and the policy cache, the mirror service configured to prepare modified and created files in a share to be written to a repository as specified in the protection policy associated with the share” (0014, a copy might be created in Kansas from a version in California.).

Yakir, Wilde, and Wienman are all directed towards storage management. All are therefore within the same field of endeavor. For the reasons given above, it would have been obvious to one of ordinary skill at the time the invention was made to apply Weinman's disclosure of keeping data in more than one location to the combination of Yakir and Wilde for providing a way of protecting data.

**Claim 10:**

As to claim 10, Wienman discloses the claimed limitations

“a location cache in communication with the mirror service and operative to indicate which repository should receive an updated version of an existing file” (0014, a copy might be created in Kansas from a version in california); and

“a location manager coupled to the location cache and operative to update the location cache when the system writes a new file to a specific repository node” (0015, a central server that

keeps track of the global number of copies of each object and their locations).

**Claim 11:**

As to claim 11, Wienman discloses the claimed limitations

“a local repository node API configured to communicate with the fileserver API” (0014, a copy might be created in Kansas from a version in California. Hence, a local node in communication with a fileserver);

“a local repository file transfer module in communication with the fileserver file transfer module and configured to transfer files to the fileserver file transfer module” (0014, a copy might be created in Kansas from a version in California. Hence a transfer of a copy); and

“a data mover in communication with the local repository API and configured to supervise the replication of files from the local repository to the fileserver” (0015, a central server keeps track of the global number of copies of each object and their locations.).

**Claim 12:**

As to claim 12, Yakir discloses the claimed limitations,

a remote repository having:

“a remote repository node API adapted for communicating with the network” (0014, a copy might be created in Kansas from a version in California. Hence, a local node in communication with a fileserver);

“a remote repository file transfer module in communication with the local file transfer module and adapted for transferring files to the fileserver file transfer module”

(0014, a copy might be created in Kansas from a version in California. Hence a transfer of a copy); and

“a data mover in communication with the remote repository API and operative to supervise the replication of files from the remote repository to the fileserver”( 0015, a central server keeps track of the global number of copies of each object and their locations.).

**7. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040049513 by Yakir (hereafter Yakir) further in view of U.S. Patent Application Publication 20020055972 by Weinman, JR. (hereafter Weinman) and U.S. Patent 5991753 by Wilde (hereafter Wilde).**

**Claim 13:**

Yakir discloses the following claimed limitations

"providing a fileserver having:

A file system operative to store client files;" [file system, 0004];

“a policy component configured to store a protection policy associated with a set of files;" [0023, the information stored in database may include information related to storage policies and rules configured for the storage environment.];

“a fileserver file transfer module in communication with the file system and configured to transfer files for the file system to and/or from at least one repository; and”

“a location updating component configured to maintain a list of repository nodes”

“wherein using the lists, said fileserver is configured to initiate recovery of files in the set of files on the fileserver;"

“wherein using a stub file in the set of stub files, said fileserver is configured to allow access to a full content of a file associated with the stub file;”

“recursively, determining a utilization of the fileserver;”

“staging out one candidate file;”

“replacing the candidate file with a stub file; and”

Yakir does not explicitly disclose:

“a mirror service in communication with the policy component, the mirror service operative to prepare modified and created files in a set of files to be written to a repository as specified in the protection policy associated with the set of files;”

“a fileserver API coupled to the mirror service configured to communicate with a repository;”

“determining a caching level for said fileserver; and”

“comparing the caching level against the utilization; and”

“creating a file migration candidate list when the utilization exceeds the caching level;”

“determining whether the utilization of the fileserver still exceeds the caching level.”

and “contain a replica of each file in the set of files and a list of files in the set of files stored at the destination fileserver;”

Weinman discloses 0013 that there is a need in the art for identifying and dynamically creating and re-inserting mirrored data if the copies of the mirrored data have been lost due to a disaster such that a minimum number of copies for the mirrored data would be maintained. Further

Art Unit: 2167

stating in 0014 that if the number of copies of the data is reduced, due to cache removal policies such as 'least recently used', or due to disasters, the number of copies of the data are carefully monitored to ensure that they don't fall below at least  $n$  copies of the data. Therefore, Weinman suggests "a mirror service in communication with the policy component, the mirror service operative to prepare modified and created files in a set of files to be written to a repository as specified in the protection policy associated with the set of files;"

Weinman discloses that users associated with a particular location have a browser served by particular content distribution site. Further disclosing 0013, having mirror data and maintaining multiple copies at different locations. Hence Weinman, suggests, "a fileserver API coupled to the mirror service configured to communicate with a repository;"

Weinman discloses 0014 that the number of copies of the data are carefully monitored to ensure that they don't fall below a number  $n$ ; hence suggesting "determining a caching level for said fileserver; and".

Weinman discloses 0035 that the minimum number of copies " $n$ " may further be determined based on capacity of the system. For example, the system is currently utilized at high capacity, " $n$ " may be set low as the system resources are relatively scarce. Hence Weimann, suggests "Comparing the caching level against the utilization".



Weinman discloses 0035 that the minimum number of copies “n” may further be determined based on capacity of the system. For example, the system is currently utilized at high capacity, “n” may be set low as the system resources are relatively scarce. Hence Weinman, suggests “Determining whether the utilization of the fileserver still exceeds the caching level”.

Weinman discloses 0046, location information is stored in a central index server. 0015, a central server keeps track of the global number of copies of each object and their locations. In the event that the number of copies of the data falls outside of the predetermined threshold, the central server determines a current location or locations where copies should be deleted, or a new location or locations where copies should be created that meets the distance separation criteria. Hence, Weinman suggests “creating a file migration candidate list when the utilization exceeds the caching level”;

Both Yakir and Weinman are directed towards data storage and management, hence both Yakir and Weinman are within the same field of endeavor. For the reasons given above, it would have been obvious to one of ordinary skill at the time the invention was made to apply Weinman’s disclosure of keeping data in more than one location to Yakir’s system for providing a way of protecting data.

Yakir and Weinman do not explicitly disclose “contain a replica of each file in the set of files and a list of files in the set of files stored at the destination fileserver;”

On the other hand, Wilde discloses figure 3 element 31 containing a resident file and a stub file, respectively elements 38 and 34. Accordingly, containing a replica file (element 38) and a list of files in the set of files stored at the destination server (resident files 38 and 40) is disclosed.

It would have been obvious to a person of an ordinary skill at the time invention was made to have applied Wilde's disclosure above to the combination of Yakir and Weinman for the purpose of providing operations of file migration systems. In providing, a replica file and a list of files stored on the destination server it allows for less disk space to be utilized. The more efficient saving space in order to save more data becomes.

**Claim 14:**

As to claim 14, Yakir discloses 0004, when a file is migrated from its original storage location to another storage location, a stub file or tag file is left in place of the migrated file in the original storage location. Hence Yakir discloses "staging out another candidate file". Weinman further discloses that a central server keeps track of the global number of copies of each object and their locations deleting or creating copies on repository nodes, hence Weinman suggests maintaining a "candidate list". Further suggesting that 0035, the minimum number of copies "n" may further be determined based on capacity of the system, hence suggesting determining if the utilization of the fileserver still exceeds the caching level. Therefore the combination of Yakir, Wilde, and Weinman suggests "wherein said determining if the utilization of the fileserver still exceeds the caching level further comprises staging out another candidate file on the candidate list and again determining if the utilization of the fileserver exceeds the caching level."

**8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 20040049513 by Yakir (hereafter Yakir), U.S. Patent Application Publication 20020055972 by Weinman, JR. (hereafter Weinman), and U.S. Patent 5991753 by Wilde (hereafter Wilde) further in view of U.S. Patent 5564037 by Lam (hereafter Lam).**

**Claim 15:**

Yakir, Wilde, and Weinman do not disclose “wherein said replacing the stub file for the specified file is higher priority task than replacing the stub files for non-requested files”.

On the other hand, Lam discloses col. 1 lines 59-64-col. 2 lines 4-20, that the frequency of use of the data can be used as a criterion for migrating data from the fileserver to the secondary and tertiary storage devices. That is depending on the frequency of use (i.e. priority) a file is put into a fileserver, if the it is determined that the file is not requested enough, the file is replaced with the stub file on the fileserver. Hence Lam suggests “wherein said replacing the stub files for the specified file is higher priority task than replacing the stub files for non-requested files”.

Yakir, Wilde, Wienman, and Lam are all directed towards storage management. All are therefore within the same field of endeavor. For the above reasons, it would have been obvious to one of ordinary skill at the time the invention was made to have applied Lam’s disclosure of determining a migration priority to the combination of Yakir and Wienman for providing a more efficient method of storing the data files of a networked computer system based on the cost, speed, and capacity of the hierarchy of storage devices.

***Response to Amendment***

9. Applicant's arguments with respect to claim 10/31/07 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. The prior art made of record listed on PTO-892 and not relied, if any, upon is considered pertinent to applicant's disclosure.

***Contact Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Pham whose telephone number is (571)272-3924.

The examiner can normally be reached on Monday - Friday 9am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/659,642  
Art Unit: 2167

Page 20

/M. D. P./  
Michael D. Pham  
Art Unit 2167  
Examiner

John Cottingham  
Art Unit 2167  
Supervisor

/John R. Cottingham/

Supervisory Patent Examiner, Art Unit 2167